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10/517,644	12/09/2004	Chikafumi Yokoyama	57964US004	3064
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3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427				
EXAMINER				
DANIELS, MATTHEW J				
ART UNIT		PAPER NUMBER		
1791				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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LegalDocketing@mmm.com

# Office Action Summary

**Application No.**

10/517,644

**Applicant(s)**

YOKOYAMA ET AL.

**Examiner**

MATTHEW J. DANIELS

**Art Unit**

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 August 2007.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 6-24 is/are pending in the application.  
4a) Of the above claim(s) 1 and 6 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 7-20, 23 and 24 is/are rejected.  
7) ☐ Claim(s) 21 and 22 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. Rejections set forth previously under this section are withdrawn in view of the amended claims.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The rejections of Claims 7-10 and 19 set forth previously over Kosaka in view of Yokoyama and Kinzer is withdrawn. Due to the firing process of Kosaka, the mold of Kosaka would no longer have the claimed characteristics because the cured or curable materials would be destroyed by the firing process.

3. **Claims 7-10 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoyama (USPN 6306948). **As to Claim 7**, Yokoyama teaches a method of manufacturing a microstructure having a projection pattern having a predetermined shape and a predetermined size on a surface of a substrate (Figs. 2A-2E), comprising the steps of:

Providing a flexible mold (6:65, Fig. 2B, item 30) having a groove pattern having a shape and size corresponding to those of a projection pattern on a surface thereof (Figs. 2A-2E), and including a cured material (6:54-64);

Arranging a curable rib precursor material between the substrate and the mold and filling the molding material into the groove pattern of the mold (Fig. 2B, 2C);

Curing the molding material and forming a microstructure having the substrate and projection pattern integrally to the substrate (Fig. 2C); and

Releasing the microstructure from the mold (Fig. 2D).

Yokoyama does not specifically teach the cured first and second materials. However, the Examiner's position is that Yokoyama provides a mold having the same or substantially the same mold structure as claimed, and therefore reads on the claimed method. In the method of Yokoyama the mold is formed by polymerizing a photocurable acrylic monomer or oligomer (6:54-56) having sufficient flexibility to allow removal of the mold from the cured rib material (6:65-67). The claimed mold of this application is formed from two materials, but the first curable material (specification, page 6, lines 20-29) and second curable material (page 7, lines 6-14) are disclosed to be comprised of acrylic or acrylate oligomers or monomers, also providing a "Flexible Mold" (instant title). Thus, in the claimed method, by providing a mold formed from two curable acrylic or acrylate oligomers or monomers, the structure of the cured mold would be that of an acrylic or acrylate polymer, which is the same or substantially the same as that of Yokoyama. **As to Claims 8-10**, Yokoyama teaches a molding material that is photocurable (7:9-10), which can be used as a back plate for a plasma display panel (6:49-52, 8:3), and having a set of address electrodes arranged independently (8:16-20) between the ribs, which would be in parallel since the ribs are arranged in a spaced apart or parallel arrangement (Fig. 2A-2E). **As to Claim 19**, the flexible mold of Yokoyama has the claimed suitability (8:1-36).

4. **Claims 11-18, 20, 23, and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka (USPN 5992320) in view of Kinzer (USPN 5453450). **As to Claim 11**, Kosaka teaches a method of making a mold that would inherently be flexible comprising:

Coating a first curable material on a support film (Fig. 18(c), items 14 and 21, also 26:46-47);

Coating a second curable material on a master mold filling recesses of the mold (Fig. 18(b), items 13 and 60, also 26:31-35);

Laminating the coated support to the coated mold such that the first curable material is between the second curable material and the support film (Fig. 18(c));

Heat or photocuring the two curable materials (Fig. 18(c), above item 22, also 8:30, 7:10-17); and

Releasing the flexible mold from the master mold (Fig. 18(d)).

Kosaka does not specifically teach (a) a first curable material having a viscosity of 3,000 to 100,000 centipoise or (b) a second curable material having a viscosity of less than 200 centipoise. However, these aspects of the invention would have been prima facie obvious for the following reasons:

(a) Kosaka suggests that the adhesive should be a photocurable adhesive (26:46-47) comprising thermoplastics or reactive monomers (20:60-65) such as acrylates (9:3-17), but Kosaka is silent to the claimed viscosity. However, Kinzer teaches that it is known to provide epoxy-acrylate compositions (1:5-10) which are particularly suitable for bonding substrates such as plastics (1:9-10) by polymerizing to a viscosity of 4000 or 20,000 centipoise because this viscosity provides a syrup that is more suitable as a coating composition (10:45-59).

(b) Kosaka suggests that the second material (described as the ink) is in a liquid state (26:34) or a slurried state (16:31-32), and because liquids such as water have viscosity levels of about 1 centipoise, the liquid ink of Kosaka would have implicitly had the claimed viscosity (below 200 centipoise).

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Kinzer into that of Kosaka because (a) Kosaka suggests photopolymerizable adhesives, which Kinzer provides (26:47), or (b) Kosaka requires a coated adhesive on a plastic substrate (Fig. 18(c), items 14 and 21), and Kinzer teaches that it is desirable to provide a viscosity of 4000 or 20,000 centipoise because this makes a syrup more suitable for coating, as required by Kosaka, or (c) Kinzer suggests the material for adhesive use in consumer appliance industries (1:13-14), which Kosaka provides.

**As to Claims 12, 14, and 16**, both first and second materials (ink and adhesive) of Kosaka are photocurable (26:30-47). **As to Claim 13**, Kinzer teaches a partially polymerized photopolymerizable epoxy-acrylate (10:45-49, 1:1-10) which would have been desirable in the combination in view of Kosaka's suggestion to use a photopolymerizable adhesive (26:47). **As to Claim 15**, acrylate monomers, such as those taught by Kosaka (7:40-64) are acrylic acid esters. **As to Claims 17 and 18**, the support film of Kosaka can transmit irradiated light for photocuring through the support film (12:25-45 and Fig. 18(c)). **As to Claim 20**, Kosaka teaches ink (rib precursor) which contains glass (23:63-67), ceramic powder (glass is ceramic, 23:63-67), and a binder (23:65-67). **As to Claim 23**, selection off the appropriate thickness for the glass substrate of Kosaka would have been a result effective variable that one would optimize in order to avoid breakage. **As to Claim 24**, because the viscosities of the first and second curable

materials disclosed by the references above substantially the same or similar to the claimed viscosities, replacement of the second resin by the first resin would have flowed naturally from the prior art process described above in Claim 1.

***Allowable Subject Matter***

5. **Claims 21 and 22** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

6. Applicant's arguments filed 30 August 2007 have been fully considered but are not persuasive or are moot in view of the rejections set forth above. The arguments appear to be on the following grounds:

- a) (With respect to Claim 7) The Examiner has acknowledged that Yokoyama does not teach a flexible mold including a base layer made of a first and second curable material as set forth in Claim 11, and therefore Yokoyama does not teach all of the claim limitations of Claim 7.
- b) Kosaka provides a glass substrate which is fired to bring the ink layer in contact with the substrate.
- c) The fact that something is "liquid" does not necessitate a viscosity less than 200 cps.

Applicants submit that both the first and second curable materials are liquids, and that there is no basis to conclude that Kosaka teaches Applicant's second curable material.

1. These arguments are not persuasive for the following reasons:

a) Applicant's arguments do not distinguish the mold structurally, but are only drawn to the method in which the mold is made. However, for the reasons set forth previously, it is submitted that the mold of Yokoyama is not substantially different than that which would result from the two layers of curable material shaped into a mold. The reasoning is essentially that in the instant method, the first and second layers are made of the same or similar polymers. Therefore, when the first and second layers are cured to form a mold, they would no longer be structurally distinguishable as layers and would provide a mold which is the same or substantially the same as Yokoyama. This interpretation is further supported by instant Claim 24, which recites that during laminating, the second curable material is "replaced" by the first curable material. This would tend to support the Examiner's interpretation that the first layer loses its structural identity, and therefore would provide a mold substantially the same as Yokoyama.

It is noted that "made of" in line 6 of Claim 7 is not interpreted to be a recited step of making a mold, but only provides a mold which has the structural characteristics that would result. If it is Applicant's position that this is an incorrect interpretation, and that Claim 7 should be interpreted as reciting the steps of making the mold as an integral part of the method, then Claim 7 should be interpreted to expressly recite the steps for making the mold already claimed in Claim 11.

b) The argument in response to the rejection of Claim 7 over Kosaka is moot in view of the withdrawal of that rejection of Claim 7.

c) One of ordinary skill practicing the process of Kosaka recognizes that the material (Fig. 18(b), item 13) must fill recesses on the surface of the mold (Fig. 18(b), item 60). Applicants suggest



that the Examiner has not met the burden of showing that this particular "liquid" had a viscosity lower than 200 cps. However, it is submitted that one of ordinary skill would have been motivated to select and optimize the viscosity of the ink in order to provide the optimum filling of the recesses. In doing so, it would have been obvious to select a low viscosity within the claimed range.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. DANIELS whose telephone number is (571)272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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3/3/08

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